

What is claimed:

1. A semiconductor processing chamber comprising:
a chamber body having an aperture formed in a bottom of the chamber body;
a substrate support disposed in the chamber body;
a moveable shaft coupled to the substrate support and extending through the aperture;
a step formed in an inner surface of the aperture; and
a substantially annular guard ring positioned within the step and extending radially inward toward the shaft.
2. The chamber of claim 1, wherein the step further comprises:
a lip formed in the first step adapted to retain the guard ring within the step.
3. The chamber of claim 1, wherein the guard ring comprises:
a base portion having an outer circumference and an inner perimeter, wherein the outer circumference contacts the step and the inner perimeter is adapted for substantially sealing a gap between the shaft and the aperture.
4. The chamber of claim 3, wherein the outer circumference is formed as a substantially right angle to a bottom surface of the step.
5. The chamber of claim 3, wherein the outer circumference flares outward toward the substrate support.
6. The chamber of claim 3, wherein the inner perimeter is formed substantially as a wedge.

7. The chamber of claim 6, wherein a surface of the wedge slopes upward to project above the bottom of the chamber body.
8. The chamber of claim 1, wherein the guard ring further comprises:
 - a first flange disposed against the shaft;
 - a second flange disposed against the step formed in the inner surface;
 - a base portion coupling the first and second flanges; and
 - a channel separating the first flange from the second flange.
9. The chamber of claim 8, wherein the second flange forms a substantially ninety-degree angle with the base portion.
10. The chamber of claim 8, wherein at least a portion of an inner surface of the second flange is sloped.
11. The chamber of claim 8, wherein at least a portion of an inner surface of the second flange comprises a recess for engaging a lip formed on the step.
12. The chamber of claim 8, wherein the first flange extends radially inward from the base portion.
13. The chamber of claim 12, wherein the first flange is adapted to be compressed radially outward.
14. The chamber of claim 8, wherein a first end of the first flange comprises a tapered tip, the first end being disposed distal from the base portion.
15. The chamber of claim 8, wherein the channel is wide enough to substantially prevent contact between the first and second flanges.
16. The chamber of claim 8, wherein the guard ring is formed as a closed, continuous ring.

17. The chamber of claim 8, wherein the ring is formed as a split ring adapted for closing upon compression of the guard ring.

18. The chamber of claim 8, wherein a portion of the inner perimeter of the ring is formed substantially parallel to a diameter of the ring.

19. The chamber of claim 8, wherein the ring is formed as a two-component ring comprising:

- a first, substantially C-shaped component; and

- a second, substantially wedge-shaped component comprising:

- an arcuate outer portion having a radius conforming to the radius of the outer circumference of the ring; and

- a flat inner portion substantially parallel to a diameter of the ring,

- wherein the first component and the second component are adapted to be fit together to form the ring.

20. The chamber of claim 8, further comprising an insert positioned within a portion of the inner perimeter, the insert comprising:

- an arced surface conforming to the inner perimeter of the ring; and

- a flat surface be positioned substantially parallel to a diameter of the ring.

21. A semiconductor processing chamber comprising:

- a chamber body having an aperture formed in a bottom of the chamber body;

- a substrate support disposed in the chamber body;

- a moveable shaft coupled to the substrate support and extending through the aperture;

- a substantially annular guard ring disposed in the aperture sealingly contacting the shaft and the bottom of the chamber.